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Patent

HM-713

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Michael Breuer, et al

Serial No: 10/575/601

Filed: April 12, 2006

For: ROLLING MILL FOR HOT-ROLLING METAL, IN PARTICULAR, ALUMINIUM IN ADDITION TO HOT-ROLLING METHOD

Examiner: Teresa Bonk

Art Unit: 1627

MAIL STOP: Appeal Brief
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

BRIEF ON APPEAL

S I R:

Applicant hereby petitions for a two-month extension of time for filing the present Brief on Appeal. Enclosed is a check in the amount of $490 in payment of the government fee for a two-month extension of time.

This appeal is taken from the Final Action mailed March 4, 2009.

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02 FC:1252 490.00 OP

REAL PARTY IN INTEREST

The real parties in interest in the above-identified application are:

SMS Demag AG
Eduard-Schloemann-Straße 4
40237 Düsseldorf, GERMANY

RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences of which applicants are aware regarding the above-identified application.

STATUS OF CLAIMS

Claims 1, 3, and 5-9 are pending in the application and are subject to the present appeal. Claims 2 und 4 have been canceled.

Claims 1, 3, 4, and 6-8 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Kramer (EP 0781609) in view of Konose et al (JP 05-161902) and Langer et al '191. Claims 5 and 9 stand rejected under 35 U.S.C. 103(a) as being unpatentable over

Kramer, Konose et al, and Langer et al, and further in view of Ginsburg.

STATUS OF AMENDMENTS AFTER FINAL REJECTION

A response to the Final Rejection was filed on August 4, 2009. An Advisory Action was issued August 21, 2009.

SUMMARY OF THE CLAIMED SUBJECT MATTER

The claimed invention will now be summarized with reference to the drawings being made by way of reference numerals.

Independent claim 1: The claimed invention is directed to a rolling mill for hot-rolling aluminum. As illustrated in Fig. 1 of the drawing and discussed in the first four lines of page 6 of the specification, the rolling mill 1 comprises a roughing train 4 and a finish-rolling train 5, wherein the roughing train 4 is a tandem train in which the rolling stack is rolled in tandem operation with the simultaneous participation of at least two roughing stands 8, 9 installed one after the other, as mentioned in lines 5-9 on page 6 of the specification. Coilers 15, 14 are installed upstream and downstream of the finish-rolling train 5, as mentioned in lines 16-18 on page 6 of the specification. A

trimming sheer the roughing train 4 operates together with the finishing train 5 as a tandem train, as mentioned in lines 7-9 on page 6 of the specification. The roughing train does not include a coiler so that the rolling stock passes directly from the roughing train to the finishing train, wherein the roughing tandem train 4 and the finishing train 5 are operated in a reversing mode.

Method claim 6: In the method for hot-rolling aluminum in accordance with the present invention, the initial product is roughed and then finished rolled in a hot-strip mill 3 with a roughing train 4 and a finish-rolling train 5, as schematically shown in Fig. 2 and described in the first full paragraph on page 7 of the specification. The initial product is roughed in the roughing train 4 itself which is equipped as a tandem train with at least two roughing stands 8, 9 installed one after the other, in tandem operation with simultaneous participation of each roughing stand. The roughed rolling stock 19 is rolled in the finishing train 5 which is equipped as a tandem train with at least two finishing stands 11, 12 installed one after the other in a rolling mill 1, and wherein the rolling stock is rolled in the roughing train 4 together with the finishing train 5 in tandem operation, wherein the roughing tandem train 4 and the finishing train 5 are operated in a reversing mode. All of the

stands of the at least one roughing stand and the at least one finishing stand work simultaneously when operating as a tandem.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The following grounds are presented for review:

Whether claims 1, 3, 4, and 6-8 are unpatentable under 35 U.S.C. 103(a) over Kramer in view of Konose et al and Langer et al.

Whether claims 5 and 9 are unpatentable under 35 U.S.C. 103(a) over Konose et al and Langer et al, and further in view of Ginsburg.

ARGUMENT

The rejection of claims 1, 3, 4, and 6-8 under 35 U.S.C. 103(a)

The reference to Kramer discloses a method and an installation for hot-rolling bands.

The reference to Konose et al discloses hot-rolling equipment.

The patent to Langer et al discloses a plant and process for hot-rolling strip or plate stack

The Examiner combined these references in determining that the claims would be unpatentable over such a combination. Applicant respectfully submits that none of these references, nor their combination, teach a rolling mill and method for hot rolling aluminum as in the presently claimed invention. The combination does not teach a rolling mill have all of the features now recited in the claims. Particularly, there is no teaching of the roughing tandem train and the finishing train being operated in a reversing mode, together with the other features in the claim.

Kramer explicitly teaches a single preparation stand and a single finishing stand, and gives no teaching concerning the rolling of aluminum with multiple two finishing stands. Konose et al. teach a roughing stand (there is no teaching of a finishing stand) that rolls in tandem and puts out rough strip for the finishing train. From the drawing of Konose et al. one can see that there is a connecting unit or looping pit. There is no direct connection from the tandem roughing train to the finishing train. This means that the rough strip must lie ay least once on the flat train. Therefore, the spacing between the roughing train and the finishing train is fixed. There is no teaching of combining the roughing and finishing into a tandem operation in order to reduce mill lengths. In Langer et al. it is impossible to reverse roll the strip in the roughing stand. Furthermore, the described finishing stand would make very difficult an effective strip finishing that can be directly connected with large strip lengths. In the presently claimed invention there is a tandem rolling of the roughing and finishing stands, for which the mill of Langer et al. is not suited because the roughing train does not reverse. The roughing stand of Langer et al. remains stationary during the finish rolling, while in the present invention the rolling of the next strip is possible.

A combination of these three references does not teach or suggest the present invention. The combination of references would not result in a tandem operation since there is no showing of a revering roughing train in Konose et al. and Langer et al. There is no teaching of a direct combination of the roughing and finishing in a tandem operation, as in the presently claimed invention. Furthermore, the combination does not teach a rolling mill or a method for hot rolling aluminum in which the roughing train does not include a coiler, whereby the rolling stock passes directly from the roughing train to the finishing train, as in the presently claimed invention.

The Konose et al. reference is argued by the Examiner as teaching the use of tandem stands. Applicant does not see where Konose et al. teach that the two stands are in fact tandem stands which are operated in tandem operation. Furthermore, there is no teaching in Konose et al. that their arrangement would result in lowering the extraction temperature of a heating furnace. Konose et al. clearly disclose that the slab is stopped once after rolling with the (first) mill 2 and successively with the (second) mill 3. When a slab is stopped after the first mil it is clearly not simultaneously operated in tandem operation with the second mill. There is no suggestion of these features by Konose et al., thus one skilled in the art would not find it obvious from this

reference to use a two-high tandem rolling stand in Kramer for the purpose of improving temperature profile of the metal material.

Relative to Langer, the Examiner cites this reference as teaching using reversible tandem finishing stands for the purpose of minimizing the length of the mill and controlling the temperature of the metal strip. Applicant submits that it is not obvious to one skilled in the art to combine the tandem finishing stands of Langer with the tandem roughing stands of Kramer. Langer clearly teaches that rolling mills with tandem operation should only consist of two reversing finishing stands in combination with one roughing stand, because the use of reversing stands arranged in direct succession involves the disadvantage that the roll diameters and the surface roughness of the rolls cannot be selected in dependence on the requirements of the operation preformed in each stand because the stands arte similar. Therefore, neither Langer, nor the knowledge of one skilled in the art, suggests or gives any motivation to combine a tandem finishing stand according to Langer with a roughing stand operated in tandem operation, because this would lead to the disadvantages which Langer intends to avoid (see col. 1, lines 44-49 of Langer).

Thus, applicant submits that the combination argued by the Examiner is contrary to the objectives of the individual

references and therefore would not be obvious.

Furthermore, the presently claimed invention recites that all of the stands of the finishing train and the roughing train roll simultaneously. Although Kramer discloses using all stand of a one stand roughing train and a one stand finishing train, this does not automatically also teach to even use all stands in tandem operation in case the roughing train as well as the finishing train comprises two stands in tandem configuration. This type of operation is not obvious because Langer clearly mentions the drawbacks of having too many stands operating simultaneously.

It is respectfully submitted that the rejection of claim 1 under 35 U.S.C. 103(a) over a combination of the above-discussed references should be withdrawn.

The rejection of claims 5 and 9 under 35 U.S.C. 103(a)

The reference to Ginsburg et al has been additionally cited in rejecting claims 5 and 9.

However, Applicant submits that this reference adds nothing to the teachings of the previously discussed references and does not teach the present invention as claimed.

CONCLUSION

Accordingly, in view of the above considerations, it is Applicant's position that the Examiner's rejections of claims 1, 3 and 5-9 are in error and should be reversed.

Submitted herewith is a check in the amount of $540.00 to cover the fee for filing a Brief on Appeal. A check in the amount of $1,030.00 to cover all the above listed fees is enclosed.

Please charge any additional fees or charges required at this time in connection with this application to Patent and Trademark Office Deposit Account No. 11-1835.

Respectfully submitted,

FRIEDRICH KUEFFNER

January 8, 2010

By: _____

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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on January 8, 2010.

By: _____
Friedrich Kueffner

Date: January 8, 2010

Claims Appendix

1. Rolling mill (1) for hot rolling aluminum, with a hot-strip mill (3) comprising a roughing train (4) and a finish-rolling train (5), wherein the roughing train (4) is designed as a tandem train, in which the rolling stock is rolled in tandem operation with the simultaneous participation of at least two roughing stands (8, 9) installed one after the other; wherein the finish-rolling train (5) comprises as a tandem train at least two finishing stands (11, 12) installed one after other, with which the rolling stock is rolled in tandem operation with the simultaneous participation of each finishing stand (11, 12); and wherein coilers (15, 14) are installed upstream and downstream, respectively, of the finish-rolling train (5), wherein the roughing train (4) operates together with the finishing train (5) as a tandem train, wherein the rolling stock is rolled in tandem operation with the simultaneous participation of the stands of the roughing train and the finishing train, the roughing train not including a coiler so that the rolling stock passes directly from the roughing train to the finishing train, wherein the roughing tandem train (4) and the finishing train (5) are operated in a reversing mode.

2. (Canceled)

3. Rolling mill in accordance with Claim 1, wherein the roughing tandem train (4) comprises two-high stands (8, 9).

4. (Canceled)

5. Rolling mill in accordance with Claim 1 with the following layout:

-- furnace region (2) for supplying heat to an initial product before shaping,

-- heavy cropping shear (6),

-- edging stand (7),

-- two roughing stands (8,9) installed one after the other, which operate in tandem operation in a reversing mode,

-- a flying shear (10),

-- a first coiler (15),

-- two finishing stands (11, 12) installed one after the other, which operate in tandem operation in a reversing mode, and

-- a second coiler (14).

6. Method for hot rolling aluminum, wherein the initial product is roughed and then finish rolled in a hot-strip mill (3) with a roughing train (4) and a finish-rolling train (5); wherein the initial product is roughed in the roughing train (4) itself,

which is equipped as a tandem train with at least two roughing stands (8, 9) installed one after the other, in tandem operation with simultaneous participation of each roughing stand; and wherein the roughed rolling stock (19) in the finishing train (5), which is equipped as a tandem train with at least two finishing stands (11, 12) installed one after the other, in a rolling mill (1) in accordance with Claim 1, wherein the rolling stock is rolled in the roughing train (4) together with the finishing train (5) in tandem operation, the roughing tandem train (4) and the finishing train (5) being operated in a reversing mode, all of the stands of the at least one roughing stand and the at least one finishing stand working simultaneously when operating as a tandem.

7. Method in accordance with Claim 6, comprising rolling out the initial product in the roughing stands (8, 9) and running the rolled product into the finishing train (5) with simultaneous participation of all stands of the roughing train (4) and the finishing train (5) (step IIa).

8. Method in accordance with Claim 6, comprising rolling out the initial product in the roughing stands (8, 9) and subsequent reversing finish rolling in tandem operation of the finishing train (5).

9. Method in accordance with Claim 8, comprising the following steps:

-- conveyance of a hot aluminum billet as the initial product (17) into a tandem roughing train (4),

-- reversing roughing with the roughing stands (8, 9) in tandem operation (step I),

-- initial cropping of the roughed product (19), especially the aluminum mill bar, by means of a heavy shear (6),

-- rolling out to a predetermined roughing thickness of the roughed product (19),

-- cropping of the roughed product (19) with a flying shear (10),

-- coiling of the strip (13) that has been run through the finishing train (5), which operates in tandem operation, with a second coiler (14), which is installed downstream of the finishing train (5),

-- reversal of the direction of movement of the rolling stands (11, 12) and drawing the strip (13) back into the finishing train (5),

-- coiling onto a coiler (15) upstream of the finishing train (5) with simultaneous uncoiling from the second coiler (14), and

-- carrying out the rolling step in the finishing train (5) one or more times (step IIb).

EVIDENCE

N.A.

RELATED PROCEEDINGS

There are no related proceedings.